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A STATISTICAL ANALYSIS OF CRIME AGAINST
FOREIGNERS IN UNIFIED GERMANY

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Crime Against Foreigners in Unified Germany

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Abstract

Germany has seen a high and rising rate of anti-foreigner violence during the early 1990s. To analyze the determinants of crime against foreigners we assembled a new dataset on the number and nature of such crime at the county level based on newspaper reports. We find significant differences in the patterns of violence in the eastern and western parts of the country. The incidence of anti-foreigner crime is higher in the east and rises with distance from the former west German border. Economic variables like unemployment and wages matter little for the level of crime once location in the east is controlled for. We also find no relation with the number of foreigners in a county in the west. These results are hard to reconcile with simple economic models of crime.

1. Introduction

German unification and the transition to a market economy in former East Germany has been accompanied by a high and rising rate of violence against foreigners. In 1992, the police recorded 6,336 crimes against foreigners, 2,544 of which were violent crimes. The high number of attacks that have occurred during the last few years and their high growth rate highlight the need to understand the determinants of crime against foreigners. In this paper, we seek to determine the correlates of violence against foreigners in Germany at a regional level.

Two main strands of literature on ethnic violence in Germany have surfaced in the past few years. The first, rooted in sociology and social psychology, consists of surveys primarily of youths. These surveys try to evaluate the respondents' attitudes towards foreigners, their political leanings, and their propensities to participate in acts of violence. The goal of these studies is to isolate potential causes for individuals' participation in anti-foreigner crimes (see Schnabel (1993) for a critical review of these studies). Clear conclusions are rare despite the large number of such surveys. The second strand of literature has more of a political science focus, and has tried to determine the degree to which the current increase in violence is related to rising right-wing extremism. Much of this literature is rather conjectural. In an intriguing recent paper, Alber (1994) hypothesizes that, "anti-foreign violence should predominantly occur in regions with a high proportion of immigrants, with high unemployment, and with a local political center that is occupied by conservative and patriotic political elites who do not ostentatiously de-legitimate excessive nationalism." Alber recommends using regional-level data to test these hypotheses.

Our paper is the first that we are aware of to analyze regional-level data on the incidence of crime against foreigners in Germany. To this end we have assembled a new dataset on the number and nature of anti-foreign crime at the county level. Because disaggregated data from police records are not publicly available, we constructed our data set from a comprehensive review of newspaper reports on crime against foreigners. Using regression-based analyses, we probe which economic and demographic variables are associated with the incidence of violent acts against foreigners. Although this approach seems to be novel in the German context, it draws on a large tradition in the American social science literature investigating the determinants of lynchings at the turn of the century, and, for more recent periods, crime rates in general.

Some clear results emerge from our analysis. There are significant differences in the incidence and pattern of the violence in the eastern and western parts of the country. The incidence of anti-foreign violence, either per foreigner or per capita, is greater in the eastern states, and many of the attacks in the east are concentrated in the rural coastal areas and along the Polish border. Economic strain, as measured by high unemployment or low wages, seems to contribute little to the incidence of violence once location in the east is held constant. This finding is consistent with much of the literature on crime for the U.S. and with the survey evidence for Germany. In particular Heitmeyer (1992) stresses that even multiple indicators of economic pressures do not help to predict likely involvement in violence at the individual level. We also find no relationship between the fraction of foreigners in a county and the number of attacks for west Germany. This contradicts theories trying to relate crime to criminal opportunities.

In general, our results are difficult to reconcile with simple economic theories of crime against foreigners. In particular, Alber's plausible hypotheses that crime should be positively associated with the level of immigrants and the rate of unemployment in an area are not supported. A more complex process seems to be at work, perhaps a repercussion of the difficult issues arising from unification between east and west Germany.

The remainder of the paper is organized as follows. Section 2 provides some background on Germany's migration history and the rise of violence against foreigners. It also describes some major events which seemed to have played an important role as catalysts for future criminal acts. Section 3 describes our data set. Sections 4 and 5 present our main findings. We first describe the broad regional patterns of the violence and of our covariates before presenting regression results. These findings are discussed in section 6, section 7 offers our conclusions.

2. The Rise in Anti-Foreigner Violence

Post World War II Germany continually has had a large inflow of foreigners. Nevertheless, the extent and composition of immigration has changed dramatically over time and has differed considerably between the East and the West. At times, foreigners were actively recruited as guest workers. While foreign workers from Communist countries in the Third World remained short-term visitors in the East, and their numbers remained small, many of the southern European workers who came to the West during the boom in the 1960s have settled permanently. They still make up by far the largest group of foreigners in Germany.

Nefarious acts by right-wing extremists increased in both parts of Germany during the 1980s. According to official reports, between 188 and 481 right-wing extremist acts were counted East Germany for the two year period 1988 and 1989 (Knütter, 1993). During the same period, 457 violent right-wing crimes took place in the West (BMI, 1994). In the mid 1980s, right-wing extremist parties began to single out foreigners as targets in their propaganda. The number of violent crimes against foreigners in the West increased from 50 in 1985 to 152 in 1990 (Sippel, 1993).

In October 1990, East and West Germany were unified into a single nation. Economic union was accompanied by mass layoffs and plant closing in the east, leading to depression-level unemployment rates. The eastern economy was propped up by massive subsidies from the west. The collapse of other economies in Eastern Europe, the opening of the borders of the former Communist countries, and ethnic conflicts on the Balkan led to greater migration flows into Germany in the early 1990s. By 1991, Germany had a gross annual inflow of more than one million immigrants. In addition, a growing share of the arrivals were asylum seekers. Their numbers grew from 121,000 in 1989 to 256,000 in 1991 and 438,000 in 1992. Although asylum seekers made up just 10% of all immigrants (including ethnic German re-settlers) in 1989, their share grew to 30% by 1992.

At the time of unification, foreigners made up about 8 percent of the population in the west. There were hardly any immigrants in the east, as most guest workers from the communist period returned home. There was also little reason for economic migrants in the west to look for jobs in the east given the high rate of unemployment there. Nevertheless, the federal government decided that eastern states should bear their fair share of the burden of housing

newly arriving asylum seekers, so many former Soviet barracks were converted to homes for asylum seekers.

Figure 1, based on aggregate monthly data released by the federal police, shows the number crimes against foreigners. There are various peaks in these data, associated with specific events which were widely covered by the media. On Tuesday, September 17, 1991, there was a tragic assault against foreigners living in an asylum seeker home in Hoyerswerda in the eastern state of Saxony, about 20 miles from the Polish border. This incident incited a week of rioting, with more than 100 participants involved. Local residents demanded that the asylum seeker home be closed. During the night of Tuesday, September 24, authorities gave in to these demands and the police evacuated some 230 asylum seekers through a clapping and stone-throwing crowd. Thirty-three people were injured during these riots. At the same time, the number of anti-foreigner attacks shot up dramatically, from 104 in August to 961 in October. The number of violent anti-foreigner crimes also rose, from 152 in 1990 to 1257 in 1991 (Sippel, 1993).

There are three other incidents that appear to have served as catalysts for similar bursts in the number of crimes against foreigners. The first are the riots against the Central Intake Station for Asylum Seekers in Rostock-Lichtenhagen in the eastern costal state of Mecklenburg-Vorpommern in late August of 1992. The pattern was similar to Hoyerswerda. Another spike in the number of crimes occurred two month later when three Turkish residents died in fire bombings of two residences in Mölln, Schleswig-Holstein (west). The next spike is associated with another fire bombing of a Turkish home in Solingen, Northrhine-Westfalia (west) in May

1993, killing five. In between these events, the number of attacks fell back to lower levels, but remained far above the level in early 1991.

Interestingly, many large-scale riots, such as the well known riots in Hoyerswerda and Rostock -- and less well known incidents in Wismar, Cottbus, and Quedlinburg -- took place in the east. These attacks were directed against asylum seekers homes. And in each case the rioters were supported by the neighboring German population. The picture in the west is rather different. The well know attacks of Mölln and Solingen were fire bombings by small groups of individuals. The local population was outraged by these crimes.

It is also important to place the magnitude of the number of crimes against foreigners in Germany in perspective. A total of 13,000 criminal acts were committed in 1992 and 1993, which seems like a large number. But many of these were minor crimes like propaganda and threats. In 1992, the worst year of anti-foreign violence in Germany, there were 2,544 violent crimes. These include homicides, arson and bombings, assaults, and vandalism with major damage. This implies a violent crime rate against foreigners of about 3 per 100,000 residents. Overall, there were a total of 150,000 violent crimes recorded in Germany in 1992, for a crime rate of 188 per 100,000 residents. By contrast, the violent crime rate for the U.S. was 758 per 100,000 in 1991. Other European countries have been experiencing crime against foreigners as well during this period. While published statistics are not easily comparable across countries it seems clear that the level of crime is much lower in most other countries with the exception of the UK, which has a similar number of racial crimes as Germany.

In addition to the number of anti-foreigner crimes, Figure 1 shows an index of anti-foreigner sentiment.[1] It is derived from the monthly survey "Politbarometer," a poll used to determine political preferences of the voting population. In addition, the poll asks a variety of questions on social and political attitudes. One of the questions asks respondents to state what they feel are the two most important problems facing Germany. The results that we show are for the west only (since economic conditions remain the most important concern in the east throughout). They refer to any response naming foreigners, asylum seekers, or ethnic German re-settlers as a problem (i.e. not the violence against foreigners itself).

The pattern is striking. There was a surge of anti-foreigner sentiment in early 1989. Immigration into West Germany had been rising steadily during the past five years. Although anti-foreigner crime had been rising since 1985, there was no unusual increase in such incidents in that year. Anti-foreigner sentiment subsided during the period of turmoil in Eastern Europe and the unification period. It rose during the Hoyerswerda riots, and remained much higher during the next two years with peaks around times of major incidents such as Rostock, Mölln, and Solingen.

This raises a question as to whether public opinion is a major driving force behind the attacks or whether publicity about anti-foreigner violence influences public sentiment. Ohlemacher (1994) has attempted to address this issue using a different question from the "Politbarometer" survey. Ohlemacher's question refers to the perceived misuse of asylum laws. His sample is limited to monthly data between October 1991 and December 1992. Ohlemacher correlates the monthly number of incidents with the contemporaneous and lagged sentiment

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[1] This series was provided to us by Manfred Kuechler.

index. He finds the strongest correlation between crime and the lag of public opinion. While he recognizes that it is likely causality runs in both directions, he concludes that public opinion is an important driving factor in explaining the temporal pattern of crime.

We find Ohlemacher's conclusion rather tenuous. His correlations are based on only 12 observations. The results are driven by a single data point: the month before the fire bombing in Mölln. The Politbarometer poll did not ask the question used by Ohlemacher in the months directly preceding the riots in Hoyerswerda and Rostock. These are obviously the months with the most variation the data. The alternative question, plotted in Figure 1, was asked in the poll for the entire January 1991 to May 1994 period with two exceptions: June 1991 and July 1992.[2] This means that the attitude index is available surrounding the period of the events of Hoyerswerda and Solingen, but not before the Rostock riots. Using the alternative question and the larger sample we find no indication that public opinion leads the number of crimes.

3   The Newspaper Data Set

Official police data on the extent of crime against foreigners are not available below the level of states. Unified Germany has 16 states, which makes a state-level analysis rather remote and subject to aggregation concerns. As a consequence, we have assembled a new county-level data set on the number incidents of crime against foreigners derived from newspaper reports. We refer to this data set as the Zeitung Data Set.[3] This methodology has a long history in

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[2] The corresponding values in figure 1 are interpolated.

[3] Zeitung is the German word for newspaper.

sociology, as much of the literature on lynchings and urban racial conflicts in the U.S. is based on newspaper reports (see e.g. Danzger, 1975, Inverarity, 1976, and Olzak, 1989).

Our data set is derived from a list originally compiled by the Archiv für Sozialpolitik in Frankfurt, Germany. The Archiv collected this list from several German daily and weekly newspapers and magazines.[4] The dailies are typically regional newspapers with an extensive national circulation and coverage; and the biggest papers are included. The German newspaper market is much more concentrated than the U.S. market, so these publications provide fairly comprehensive coverage of the entire nation.[5]

The list contains short summaries of each reported event. The contents of this list were coded for us in a consistent fashion by "Research on Demand" in Berkeley, CA, and coding was checked by us. The final sample consists of a total of 1,056 incidents which occurred between January 1991 and June 1993.[6] For most of these events we know the date, location, the type of crime, and often a description of the victims. In a subset of cases we have more detailed information on the number of victims and the number of perpetrators. The following excerpt gives a sample of the incidents reported on a randomly selected date (October 11, 1991), and describes the nature of the information available to us.

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[4]The number of newspapers varied somewhat over time. In late 1992, the newspapers included were Ärztezeitung, Frankfurter Allgemeine, Frankfurter Rundschau, Neue Züricher Zeitung, Süddeutsche Zeitung, Tagesspiegel, die tageszeitung, Bayernkurier, Deutsches Allgemeines Sonntagsblatt, Freitag, Hamburger Rundschau, Parlament, Profil, Spiegel, Woche im Bundestag, and Zeit.

[5] The Archiv für Sozialpolitik experimented with including more papers at some time but found that this resulted in only a small increase in the number of reports.

[6].The original data set contained 1,218 events. We eliminated incidents in which we could not determine the location or date, incidents that were double entered, and incidents that did not involve anti-foreign violence.

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Sample of Incidents for Friday, October 11, 1991

- Two skin heads shatter a window of a dormitory for foreign workers in Rangsdorf/Zossen County.
- Three young Germans throw rocks at an asylum seeker in Erlensee near Hanau.
- A Nigerian is beaten severely by a 19 year old German in downtown Saarbrücken.
- Also in Saarbrücken, according to his own account, a refugee from Sri Lanka is abducted after getting off a bus, sedated, and thrown on train tracks. He is found by police near the tracks in the evening. Blood stains show that he has been run over by a train. His right leg has to be amputated under the hip in an emergency medical procedure.

We aggregated the events in our database to the level of counties. The sample consists of data on 543 counties. Every incident is assigned the same weight, independent of the severity of the crime and the number of perpetrators involved. For example, the riots in Rostock are counted as one incident, just as the case of two skinheads shattering the window in a dormitory for foreign workers mentioned in the sample from October 11, 1991 above. This is clearly problematic. To assess whether the severity of the crime matters we provide separate analyses for our full sample and for serious crimes (murder and arson) only.

We provide two checks on the accuracy of the newspaper-based database. First, we aggregated our Zeitung data to the state level, and computed the number of incidents per person in the state. We then compared the official state-level police anti-foreigner crime rate to this state-level Zeitung crime rate. We would expect the two sources of data to be positively correlated. The correlation coefficient between the police data and Zeitung data is .54. A regression of the number of incidents from the police data on the number of incidents from the

Zeitung data and an intercept yields a coefficient of 1.55 (std. error of .65), which suggests that the 1.55 police crimes are registered for each incident reported in the newspaper.[7] If we add a dummy variable to this regression indicating whether the state is in the east or west, the dummy has statistically insignificant effect while the Zeitung incident rate continues to be significant. This suggests that the Zeitung data do not have an obvious east-west regional bias. Although we would prefer to find a higher correlation between the police and Zeitung data, these results suggest that the Zeitung data set conveys some signal on the frequency of crimes against foreigners.

Second, we formed nationwide monthly totals of the Zeitung data to compare to the national numbers released by the police. This comparison is shown in Figure 2 for our sample period. Three conclusions can be drawn from the figure. First, we count only about one tenth of all the incidents per month recorded by the police. This is not surprising, as many of the crimes the police investigate will be rather minor violations that are not reported in the press. Second, our data track the temporal pattern of the police data rather well. In particular, we do not see over reporting in the press after the events of Hoyerswerda, Rostock, and Solingen. Third, after the Rostock riots our data tend to record a much smaller fraction of crimes than the police data. When we limit the Zeitung sample to violent crimes, however, we do not observe the same drop off. Figure 3 shows a scatter plot of the monthly police data against our data. This also demonstrates the strong temporal correspondence between the two sources of data. The figure shows the regression line between the two. The correlation between the two series is 0.75.

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[7]The intercept term in this regression has a coefficient of 6.

Finally, Figure 4 compares our data to the police data by the type of crime committed. We have grouped the data into four major groups: violent crime resulting in the death of a victim or attempted murder which we call murder,[8] arson, assault and battery, and others which primarily include unlawful entry, weapons offenses, threats, and graffiti. It is clear that the newspaper coverage is best for the most serious crimes while we miss many of the minor crimes. Since the coverage of more serious crimes by the Zeitung data is more complete, below we estimate models using all our data as well as the subset of more serious crimes (murder and arson).

One might question whether the county is the right level of observation for a our study. There are 543 counties in Germany, 215 in the east and 328 in the west, with an average population of 147,000. Small counties, however, can have a population of only 20,000. Perpetrators in crimes against foreigners may not necessarily come from the locality where the crime took place. However, according to results from police files, most of the perpetrators are locals. For example, Raisch (1994) reports for the eastern state of Saxony, that 90% of suspects live in the town of the crime or within 20 kilometers. He also contends that 77 out of the 82 suspects investigated by the police for participation in the Hoyerswerda riots are from that county or the neighboring areas. All the remaining five had family ties in Hoyerswerda. These results suggest that the county unit is a reasonable level of observation.[9]

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[8] The police definition of murder is narrower, with the result that there are actually more murders in the newspaper data than in the police data.

[9] Leenen (1992) cites similar results for Northrhine-Westfalia.

<u>Variables</u>

Our covariates include several county-level measures of socioeconomic conditions, such as the fraction of foreigners and the unemployment rate. These are taken from "Aktuelle Daten zur Entwicklung der Städte, Kreise und Gemeinden 1989/90" (Current Data on the Development of the Cities, Counties, and Towns 1989/90), published by the Bundesforschungsanstalt für Landeskunde und Raumordnung (BfLR, 1992), as well as some updated variables which we obtained from the same institute. Unfortunately, more limited data are available for East Germany, and not all regressors pertain to the same date.

Since counties are of unequal size we tried two alternative approaches to scaling the dependent variable. First we used the number of incidents of anti-foreign crime per 100,000 persons (the crime rate). This is the typical variable analyzed in regional studies of crime in the sociology literature (e.g., Land, McCall, and Cohen, 1990). Second, we used the number of incidents divided by the number of foreigners residing in the county. In this case the dependent variable could be interpreted as a "victimization rate." It turns out that the results are qualitatively similar with either variable.

Our main regressors are the unemployment rate, the share of foreigners in the county, a dummy variable for being located in the east, and several variables describing the degree of urbanization of the county. The unemployment rate is based on the number of individuals registered with the local unemployment insurance office in September 1992. It does not reflect discouraged workers, who have dropped out of the labor force, or unemployed workers who are actively searching for work but do not qualify for UI benefits.

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The unemployment rate alone may not be a good indicator for economic conditions in a county. In particular, easterners living closer to the former western border can commute more easily to jobs in the west. Moreover, social attitudes and police enforcement may be different closer to the west. Therefore, we created an additional variable for counties in the east -- the distance from the former west German border. This is measured by the straight line (Euclidean) distance between the geographic center of a county and the closest county in the west.[10] In each case, we constructed the distance to the west German mainland excluding West Berlin. For west German counties this variable is set to zero.

The number of foreigners in a county is the number of those registered in a particular region as of December 1991. This includes foreign workers, unless they are in Germany for less than three months (e.g. seasonal workers), and asylum seekers. Asylum seekers typically will be registered within the first month of their arrival in Germany, but the time lags differ across states.[11] Thus, the small number of asylum seekers whose application is denied very rapidly and who leave the country may not be counted. Ethnic German immigrants (primarily from Russia, Romania, and Poland) are also not counted since they become German citizens upon arrival. In terms of their appearance towards natives they may be indistinguishable from other immigrants from the same countries. In fact, there are incidents of attacks of ethnic Germans in our database. Also excluded are foreign military personnel. This may especially be a problem for Soviet soldiers in the east. Nevertheless, the foreign share variable should give a reasonably accurate measure of the fraction of foreigners in a county.

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[10] Dietmar Harhoff provided the geographic coordinates of the counties to us.

[11] Based on personal communication with the Federal Ministry of the Interior.

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We include a variety of regressors to describe the degree of urbanization. Most importantly, four dummy variables for the degree of urbanization of the <u>region</u> (not necessarily the county itself). These are major metropolitan areas (urban), regions with some urbanization (moderately urban), rural region not on the periphery (moderately rural) and rural region on the periphery (rural).[12] We also use a dummy variable for whether the county is an independent city (this variable is called "KS," for the German "Kreisstadt") and the population per square kilometer. Finally, we include the travel time by car (in minutes) to the nearest major metropolitan area.

For the western counties more variables are available. We use the fractions of high skilled workers (at least college) and of low skilled workers (no qualification beyond secondary school, such as an apprenticeship). We also intended to include a measure of the proportion of young adults in the population, as this group represents most of the perpetrators. However, the only variable we have available is the fraction age 15 to 49. Finally, we include the logarithm of the average manufacturing wage (manufacturing payroll divided by employment).

4. A Descriptive Analysis

We first examine basic patterns of crime against foreigners. Table 1 provides descriptive statistics of the main variables in our dataset. Most of the foreigners are concentrated in the western part of Germany. The share of the population that is foreign in the east is less than one percent. In both parts of the country this share has been increasing since unification.

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[12] These are the four "siedlungsstrukturelle Regionstypen" of the BfLR.

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The total number of incidents of crime against foreigners in our dataset is 1,056. More crimes against foreigners occurred in the west, but it must be recalled that the east has only a quarter as many people as the west. This leads to an incident rate -- the number of incidents per 100,000 population -- that is more than three times as high in the east. With such a low share of foreigners living in the east, the number of incidents per foreigner is even more skewed -- almost fifty times higher in the east than in the west. The mean unemployment rate is about twice as high in the east than in the west. In addition, the eastern unemployment rate probably understates the true employment conditions in the east because of large scale government programs.

The regional dispersion in these variables can be seen more clearly in Maps 1 through 4. Map 1 shows the rate of incidence of crimes against foreigners per 100,000 residents. There are numerous white spots on the map, indicating counties without incidents in our data. Within eastern Germany, the crime rates are not only higher on average but the counties with high rates of crime tend to be clustered along the coast in the north and along the eastern border with Poland. Map 2 contains the number anti-foreign crimes per 1,000 foreigners, displays a similar pattern.

The unemployment rates in various regions are shown in Map 3. This map essentially outlines the eastern and western parts of the country. Nevertheless, it is clear that there are differences in economic conditions within the eastern and western regions: areas of Saxony, Brandenburg, and Sachsen-Anhalt are doing better than other eastern counties, while in the west, the northern coast, Ruhr, and Saar and Pfalz areas have relatively high unemployment.

Map 4 shows the density of foreigners. The foreign population is clustered in the

southwestern state of Baden-Württemberg (home of much of the machinetool and car industry), along the Rhine valley and in the Ruhr area (where west Germany's heavy industry is located). This pattern is the result of guest worker recruitment in the 1960s, when workers where needed primarily in the metal manufacturing sectors. In the east, only Berlin has a high concentration of immigrants.

The east and the west differ in the national composition of immigrants, as well as in their absolute numbers. The dominant groups in the west are Turks, Yugoslavs, Italians, and Greeks, many of whom are guest workers who have become long-term or permanent residents. The foreigners in the east are predominantly eastern Europeans, who make up much of the recent arrivals from abroad. Table 2 shows that these patterns are also reflected in the nationality of the victims.[13] In the east, 46% of the victims come from Eastern Europe and about 22% from communist (or former communist) developing countries. Only 8% of the victims are Turks. In the west, Turks are the largest group of victims (40%), slightly more than their share among the foreign population. Other southern Europeans make up 10% of the victims, and eastern Europeans make up 15%. Africans and Asians, who make up a small fraction of foreigners in the population, are clearly over represented among the victims.

Table 2 indicates that foreigners do not randomly fall victim to anti-foreign attacks, but that this type of crime is disproportionally directed at groups who differ more from Germans in terms of color, race, or religion, or who are among the most recent arrivals. Moreover, there is a higher incidence of attacks against asylum seekers than against foreign workers in general.

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[13]We know the ethnicity of victims in only 378 out of the 1,056 incidents.

Fully 54% of all incidents reported in the east were attacks against asylum seekers, and 43% were classified as such in the west.

5.   Regression Analysis of Regional Patterns of Crime

We relate the incidence of crime against foreigners to measures of the socioeconomic characteristics of the county where the incident took place and other variables.   Several specifications and estimation techniques are used.

Table 3 presents basic OLS regressions for the pooled sample of all German counties using incidents per 100,000 residents or incidents per 1,000 foreigners as the dependent variable.[14] The model in column (1) includes as explanatory variables: the unemployment rate, the foreign share and a variety of indicators of the degree of urbanization.   In these regressions the unemployment rate has a positive and highly significant coefficient with a t-ratio of about 5. However, this coefficient merely reflects the higher level of crime in the eastern part of the country. Once we also include a dummy variable that equals one for counties located in the west in column (2), the unemployment rate has a statistically insignificant and negative effect. Furthermore, the coefficient on the foreign share rises substantially.   Contrary to Alber's hypothesis, there is no evidence that within the two parts of the country higher unemployment is associated with more crime. Furthermore, the coefficient on the west dummy is larger than the raw difference in the crime incidence rate between the east and the west (3.9 versus 2.2).

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[14] Notice that there are two counties in the east with less than 0.1 % of foreigners. Because these appear as zeros in our data we could not form the ratio of incidents to the number of foreigners. These two counties are omitted from the set of regressions using incidents per 1,000 foreigners.

Column (3) adds two distance variables as regressors: the distance from the western border for the eastern counties and the travel time by car to the next metropolitan area. The distance to the west has a highly significant and large coefficient. It implies that for every 100 km of distance from the western border the number of incidents increases by 2.5 per 100,000 residents. This is much larger than the mean of the dependent variable (1.3).[15] Note also that the R^2 increases substantially. Distance from a metropolitan area also increases the crime rate. However, this effect is hard to interpret given the other urbanization variables in the regression.

The last three columns of Table 3 use the number of incidents per 1,000 foreigners as the dependent variable. The basic pattern of results is the same as in columns (1) through (3), but the results tend to be somewhat less pronounced. Nevertheless, there is no evidence of a positive association between the unemployment rate victimization rate within the regions. We also entered the foreign share of the population as an explanatory variable in these regressions. The positive coefficient on this variable implies that, within regions, the victimization rate tends to be higher in areas with relatively more foreigners.

In spite of our earlier comparison of the Zeitung and police data, one may still question whether the Zeitung data are biased in any particular direction. For example, the newspapers and wire services tend to be located in major cities, and these cities may be covered more thoroughly than other areas. We have two additional pieces of evidence which make this seem unlikely. First, all our newspapers are located in the west whereas almost half the incidents are reported to be in the east. Furthermore, within the east most events took place in rural areas, which we

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[15] Such a pattern is unlikely to result from reporting bias. More incidents are reported further away from the west where most of the newspapers are located.

would expect to be covered less comprehensively. Secondly, following Danzger (1975), we included a dummy variable for the presence of a German Press Agency (dpa) office in each county in our regressions.[16] (dpa is Germany's largest wire news service.) The coefficient on this dummy was small and insignificant.

In view of the large differences in crime and victimization rates in the east and west and our inability to account for these differences with variables such as the unemployment rate, share of foreigners, and urbanization, we free up the structure and run separate regressions for the east and the west in Table 4. Columns (1) and (2), and (5) and (6) report comparable specifications for the east and the west; the other columns add regressors that are only available for parts of the country. Pronounced differences exists in the correlates of violence in the two parts of the country.

The coefficient on the unemployment rate in the east is even more negative and marginally significant in all specifications. The coefficient on percent foreigners rises to 2 or more in the crime rate regressions meaning that a 1 percentage point increase in the foreign share result in two more attacks per 100,000 residents.

The results for the west are quite different.[17] No regressor, apart from the urbanization measures, is individually significant. Despite the fact that the percentage of foreigners varies substantially from below 2% in rural areas of eastern Bavaria or near the North Sea coast to 25% in Frankfurt, it has an insignificant influence on the number of crimes per resident. Column (4)

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[16] Martin Wortmann provided the list of dpa offices to us.

[17] The differences are statistically highly significant. An Chow-test for the equality of all coefficients in columns (1) and (2) yields an F-statistic of 13.1 which is significant far below the 1 % level.

adds additional variables, including qualifications, the fraction of adults between 15 and 49, and the manufacturing wage. None of these variables is statistically significant.

Urbanization is the only strong predictor of anti-foreign violence in the west: crime rates are highest in the major metropolitan areas. The coefficients in table 4 are difficult to interpret directly since the population density, dummies for urbanization and city-counties, and travel time all capture effects related to urbanization. If we only use the four exclusive dummy variables for degree of urbanization we find that a major center has about 0.5 more incidents per 100,000 residents than a rural area, which is a large difference given an overall mean of 0.9 for the dependent variable. Interestingly, the pattern by urbanization is exactly the reverse in the east: there, crime against foreigners is concentrated in rural areas which have 4.7 more incidents than major cities.

Table 5 reports corresponding results using only serious crimes (homicide and arson) as the dependent variable. The coefficients tend to be uniformly lower due to the lower number of total crimes. In all other respects, the qualitative results differ very little from those in Table 4.

The regressions in the previous three tables neglect the fact that there is a substantial number of counties that had no incidents of crime against foreigners in our dataset. This censoring of the data may bias the OLS results. We tried several alternative estimation strategies to address this problem. First, and most directly comparable to the OLS models, we estimated Tobit models allowing for a censored dependent variable at 0. This yielded very similar results for both the incidence rate and victimization rate.

An alternative approach is to use the number of crimes directly as the dependent variable, rather than scaling it by the population or the number of foreigners. In this case, the model is

most sensibly treated as a count data model since the number of crimes in each county is an integer and typically small. Table 6 presents both a Poisson and a negative binomial regression of our preferred specifications. The negative binomial is a Gamma-mixture of Poissons and therefore nests the Poisson model. In each case, the Poisson specification is rejected at the 1% level. In these models we also add the log of the population in the county as a regressor to account for scale. In the negative binomial results this variable has a coefficient insignificantly different from one, which is expected if population only measures scale but has no other influence on the crime rate. Otherwise, the results for both the Poisson and negative binomial specifications are similar to those obtained from the OLS models in Table 4.

Finally, we used the exact date when an incident occurred to estimate a Weibull duration model.[18] The Weibull hazard has the form

$$h(t) = \alpha t^{\alpha-1} \exp(X'\beta),$$

where $h(t)$ is the probability of an incident occurring at date t, X is a vector of explanatory variables, and α and β are parameters to be estimated. Spells from January 1991 until the first event in a county are treated as left censored; spells from the last event until June 1993 are treated as right censored. The results are quite similar to the count data models. The shape parameter α is less than one indicating that the hazard rate is decreasing. Attacks in a county tend to be clustered in time, corresponding to the aggregate pattern shown in Figure 2.

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[18] In 54 cases we only know the month but not the exact date of an event. These events were allocated to a random date in that month. Spells between two events on the same day were set to 0.1.

6.   Discussion and Relation to the Literature

Our analysis supports several tentative conclusions. First, anti-foreigner violence appears to differ in important respects between east and west Germany. The incidence rate of anti-foreign crime is much greater in the east. In the east, anti-foreign crime is more common in the rural areas. In the west, anti-foreign crime is more common in urban areas. Within the east we find that the incidence of crime against foreigners per capita rises with the fraction of foreigners in the county, but there is no relationship between these variables in the west.

Second, contrary to our expectations and Alber's hypothesis, we find that the incidence of anti-foreign crime is unrelated to the unemployment rate in an area. This finding is consistent, however, with police records on suspects and survey studies of youths. According to BMI (1994), for example, 11.3% of suspects investigated from 1991 to 1993 were unemployed. This is not much greater than the unemployment rate for the country as a whole. Furthermore, the fraction of unemployed perpetrators does not seem to be much higher in the east (see e.g. Raisch, 1994). This finding may partly be explained by the fact that the perpetrators are typically very young, more than 60% are age 20 or below, so that a significant fraction are still in school. Surveys of youths also yield a comparable result, that difficult personal economic conditions are not a predictor for violent tendencies among those surveyed (see, e.g., Schnabel, 1993).

Interestingly, regional and time-series analyses of crime in the U.S. also find crime to be unrelated to the unemployment rate. For example, Land, McCall, and Cohen, (1990) report that typical cross-sectional studies at the state, SMSA, or city level for the U.S. have found either no or a weak, negative relationship between crime rates and the local unemployment rate.

Third, the level of violence in the east is higher in counties that are located further from the western border, other things being equal. There are at least two plausible explanations for this finding. First, because it is easier to commute to the west if the county is near the west, and economic opportunities are greater for commuters, this variable may reflect economic conditions. Second, the far eastern states may be more insulated and less exposed to foreigners and western law and order. The variable may thus reflect differences in societal values and legal institutions. The fact that the distance variable was significant after we controlled for travel time to a major metropolitan area, or distance to the nearest county with under a 5% unemployment rate, provides some weak support for the latter hypothesis.

7.   **Conclusion**

A wave of hostility and violence against foreigners has shaken Germany since unification in 1990. While the number of such crimes had increased already in the late 1980s, there was a tenfold increase from 1990 to 1991 alone. It is this increase, and the political nature of the attacks, that make this a problem of particular concern. While social scientists have yet to advance a coherent theory for this rise in violence, our analysis, as well as previous work, has uncovered a number of important patterns. The rates of violence have been higher in the eastern part of the country despite the fact that very few foreigners actually live there. Foreigners, and in particular asylum seekers, had been singled out as the target of right wing propaganda, alleging them to be responsible for many of Germany's social problems.

We feel relatively confident in ruling out a direct connection between the violence and the poor economic conditions in the east. In particular, we find no connection between the

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incidence of crime and the unemployment rate or the wage rate. This confirms survey results indicating that personal economic strain alone is not a strong predictor of violent tendencies. It is also consistent with findings on crime more generally. This does not mean that the economic conditions in the east have no impact on crime against foreigners at all, but the connection is likely to be more subtle.

Lastly, we document some clear differences in anti-foreign crime between the east and the west. The higher incidence of crime in the east is consistent with survey findings that show that many youth in the east feel more inclined towards violence as a means of solving social conflicts. But not just the levels differ, the patterns differ as well. Crime against foreigners in the east is mostly concentrated in rural areas, whereas it is mostly concentrated in metropolitan areas in the west. Interestingly, we do not find any other important covariates explaining crime in the west. Once the rising wave of violence and the surrounding political climate seemed to generate enough legitimacy for this type of behavior, it broke out uniformly, independent of specific local conditions. This makes preventing and fighting such crime a difficult task, and continues to provide a challenge to social scientists to identify the causes more clearly.

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Map 1

Number of Incidents of Crime Against Foreigners per 100,000 Residents, County Level
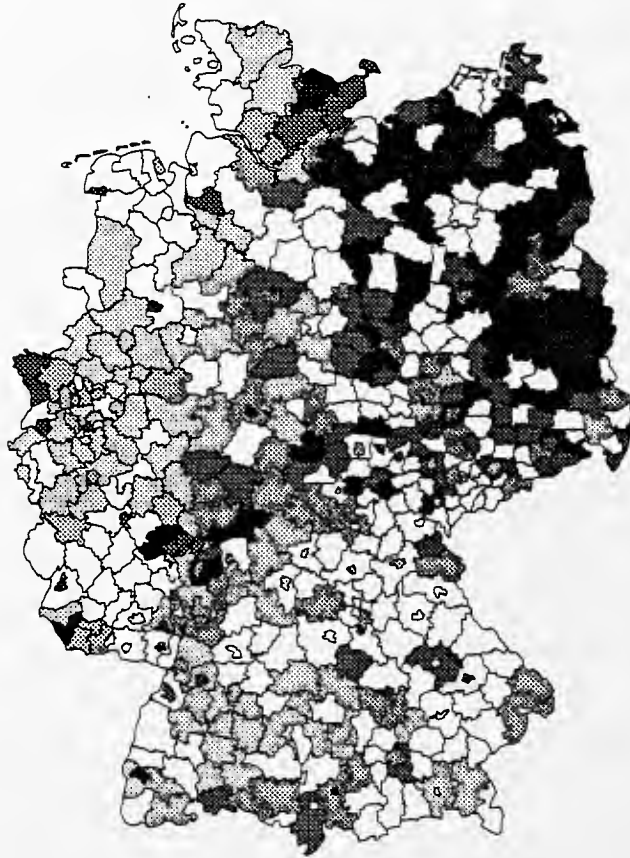
Legend

■	3.75 to 34	(81)
▨	1.75 to 3.75	(78)
▨	1 to 1.75	(76)
▨	0.15 to 1	(92)
□	0.0	(216)

Map 2

Number of Incidents of Crime Against Foreigners per 1,000 Foreigners, County Level
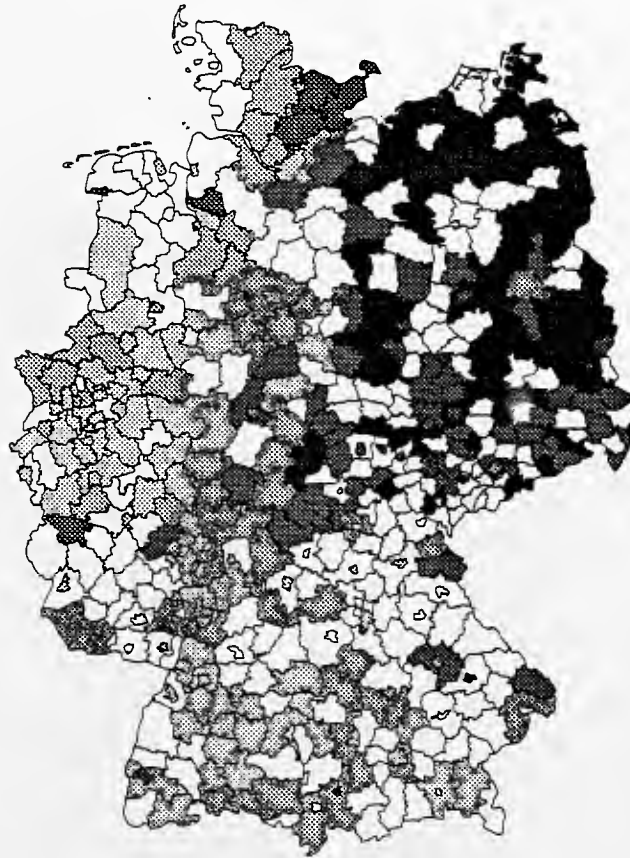
Legend

■	6	to	339	(82)
▨	0.5	to	6	(79)
▦	0.15	to	0.5	(80)
▒	0.001	to	0.15	(86)
☐	0.0	to	0.001	(216)

Map 3

Unemployment Rate
by County (Sept. 1992)
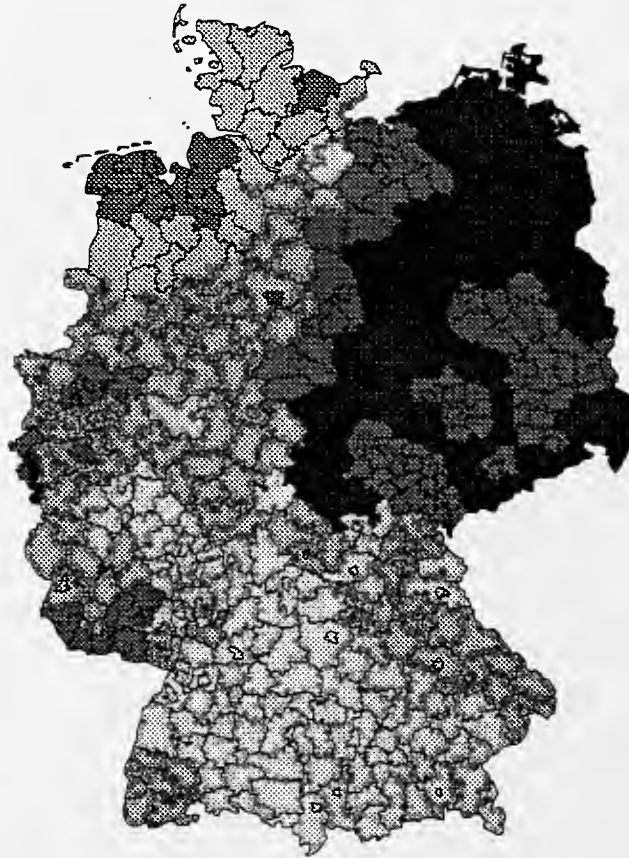
Legend

■	14.2 to 19	(139)
■	8.2 to 14.2	(133)
▨	5.2 to 8.2	(137)
▨	2.5 to 5.2	(134)

Map 4

Foreigners as a Percent
of County Population in 1991
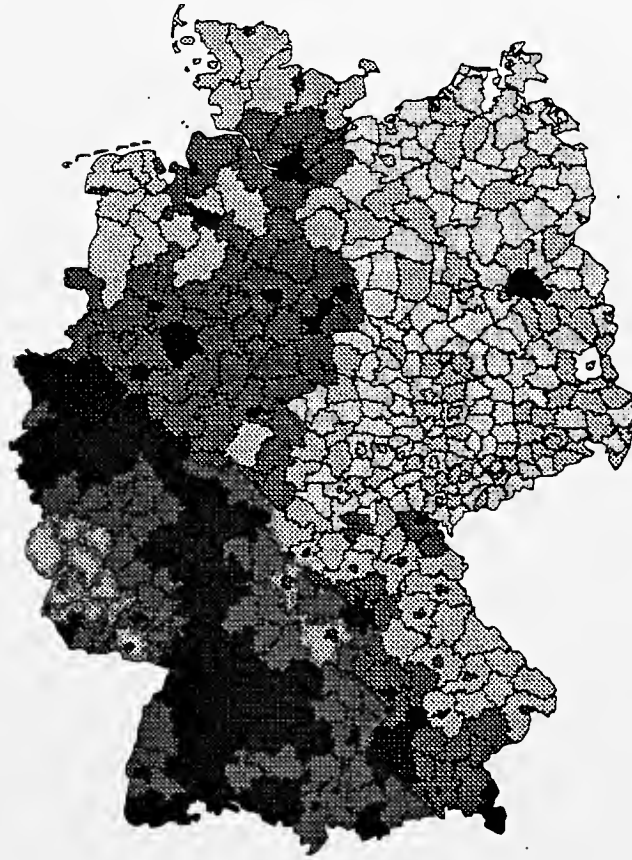
Legend

■	7.1 to 25.7	(136)
■	3.2 to 7.1	(136)
▨	0.5 to 3.2	(141)
▨	0.1 to 0.5	(128)
□	0.0 to 0.1	(2)

Figure 1
Anti Foreign Crime and Public Attitude
Police Data and Politbarometer

Perc. Thinking Foreigners Major Problem

Number of Crimes per Month

Solingen

Rostock

Hoyerswerda
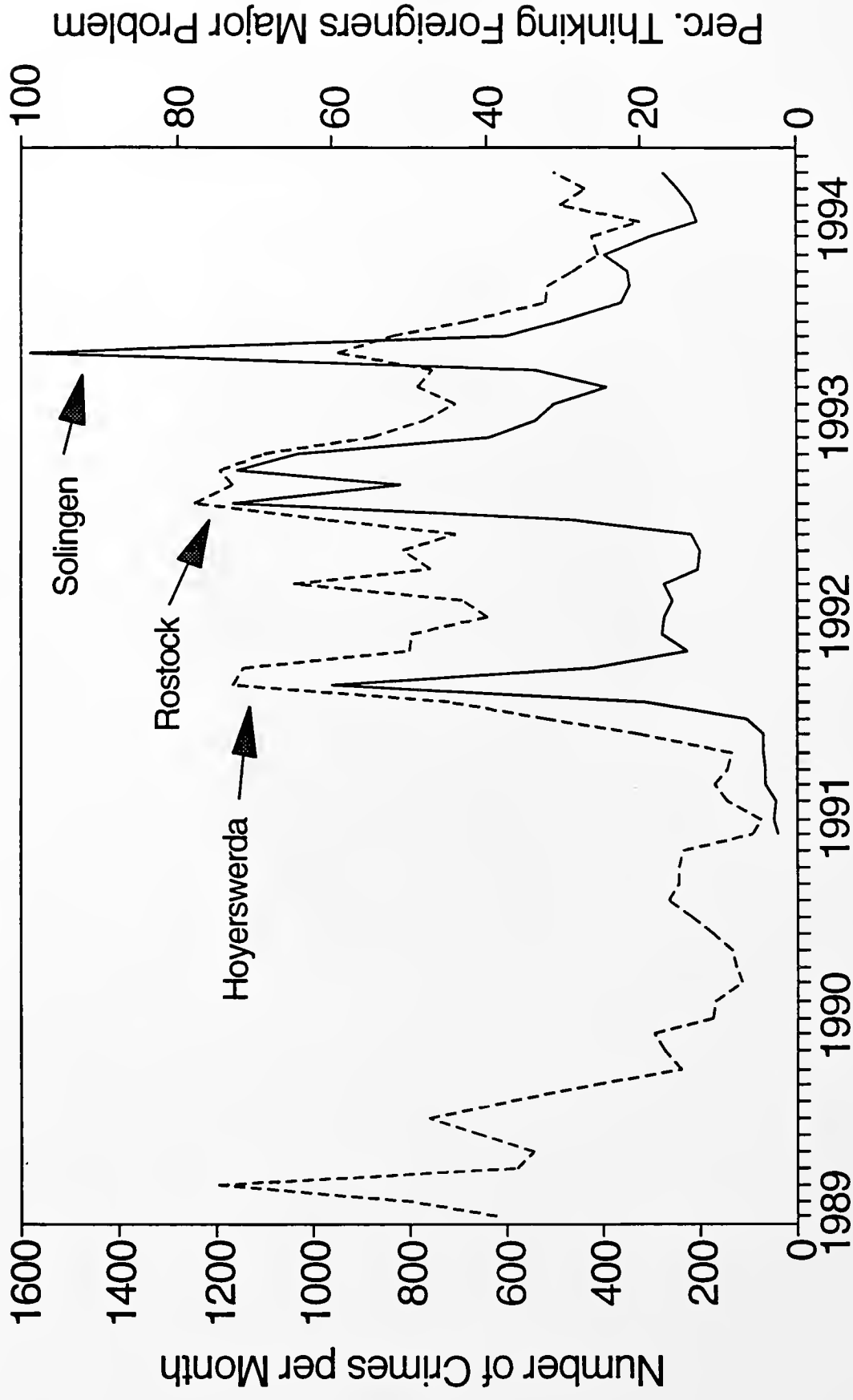
—— Number of Crimes   - - - - - Attitude Index West

Figure 2
Number of Crimes Against Foreigners
Police Data and Zeitung Data
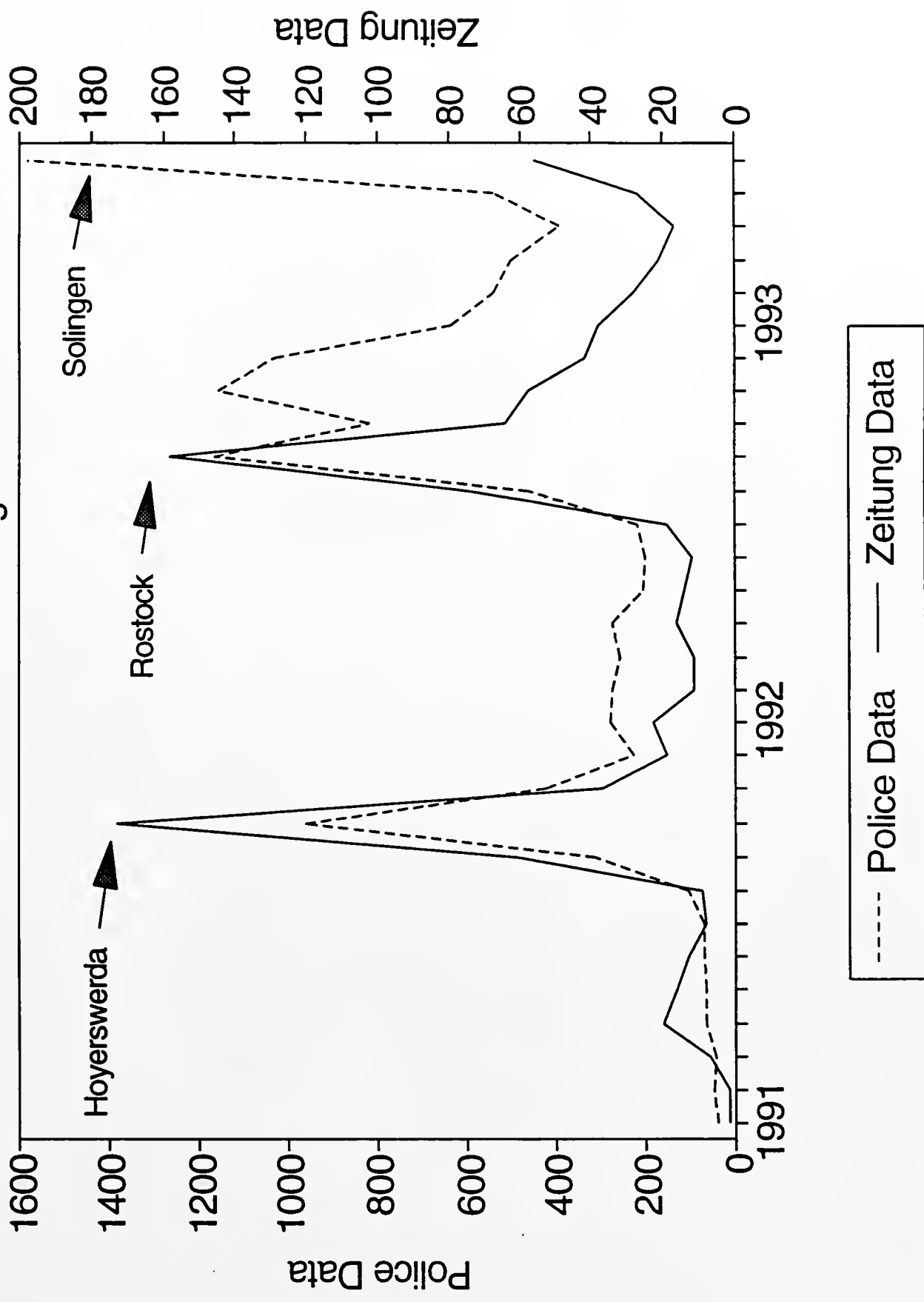
Figure 3

Number of Incidents of Crime Against Foreigners
Two Sources of Monthly Data, 1/91-6/93
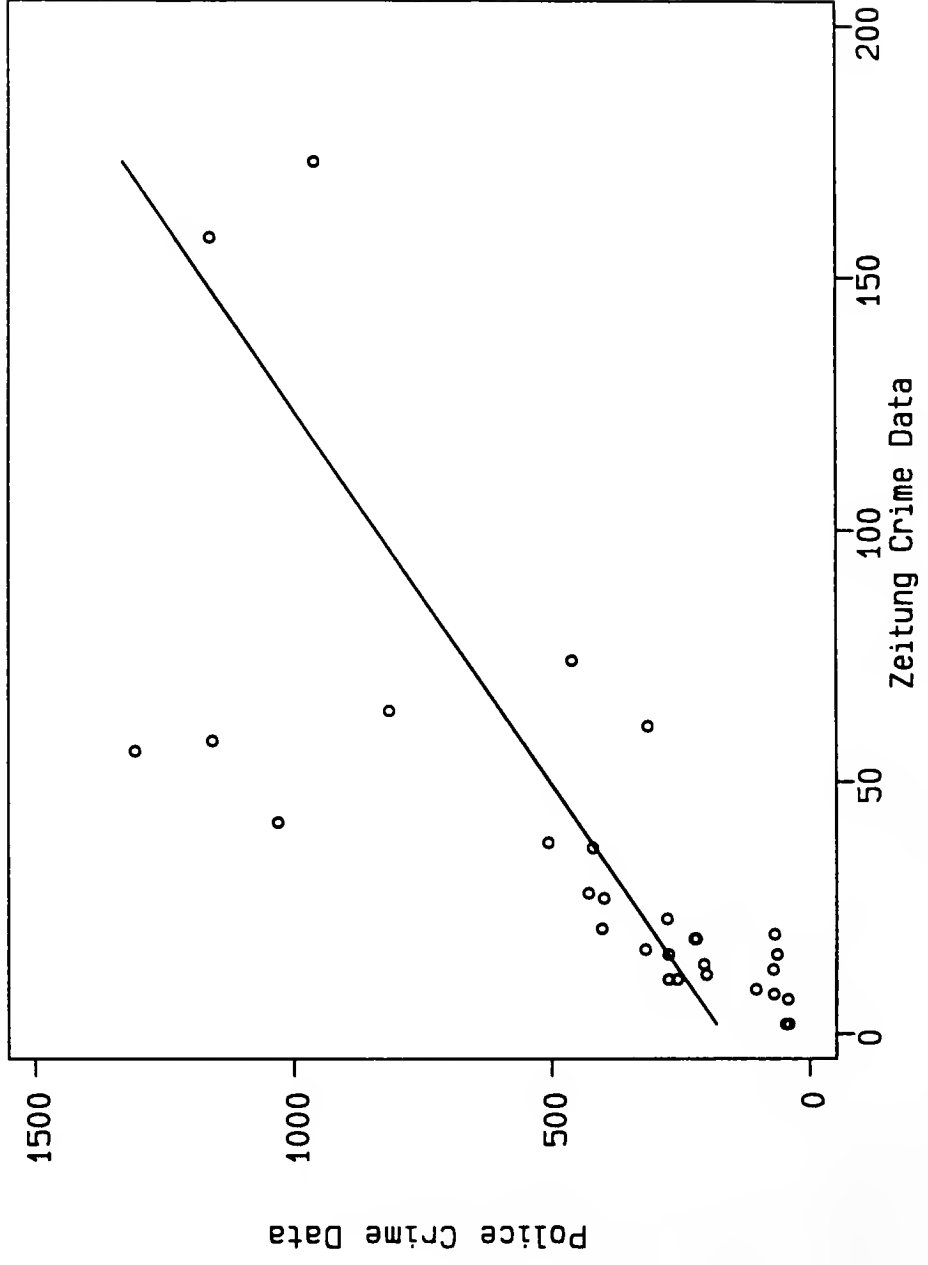
Figure 4
Type of Crime Against Foreigners
Police Data and Zeitung Data

Police Data

Murder 0.4%

Arson 8.9%

Assault 9.6%

Other 81.1%

Zeitung Data

Other 37.3%

Murder 8.7%

Arson 34.6%

Assault 19.4%
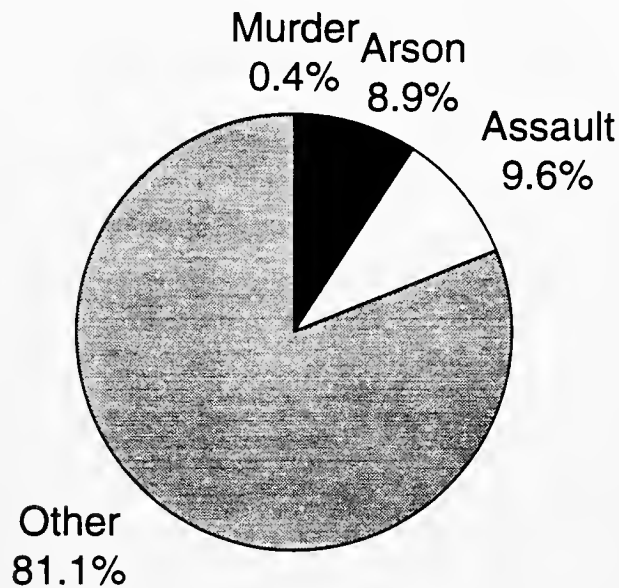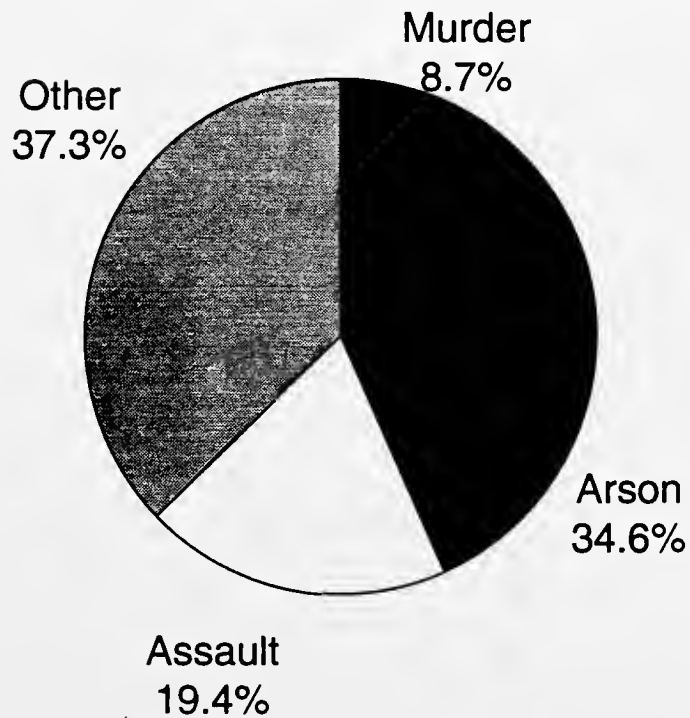
Table 1
Descriptive Statistics[a]

	East	West	All
Percent of Population That is Foreign			
1989	--	8.2%	--
1991	0.68%	8.8%	7.3%
1992	0.87%	9.5%	7.9%
Number of Zeitung Incidents			
1991 - 1993:6	462	594	1,056
Number of Serious Zeitung Incidents (Arson & Murder)			
1991 - 1993:6	236	415	651
Number of Zeitung Incidents/100,000 Population			
1991 - 1993:6	3.13	0.91	1.32
Number of Zeitung Incidents/1,000 Foreigners[b]			
1991 - 1993:6	4.63	0.10	0.18
Unemployment Rate			
1992	14.3%	6.7%	8.1%

Notes: a. Number of incidents is derived from newspaper clippings. All other variables are from BfLR.

b. Foreigners is as of 1991.

Table 2
Number of Crimes by Nationality of Victim and Foreign Shares

Nationality	Crimes (column percent in parentheses)			Origin Shares	
	East	West	Total	East	West
Eastern European	59 (46)	37 (15)	96 (25)	57.7	8.6
Polish	16 (12)	15 (6)	31 (8)	21.3	4.3
Romanian	21 (16)	11 (4)	32 (8)	8.5	1.5
former Soviet Union	20 (16)	6 (2)	26 (7)	11.6	0.7
Hungarian	1 (1)	0 (0)	1 (0)	9.3	0.8
other	2 (2)	5 (2)	6 (2)	7.0	1.4
Turkish	10 (8)	100 (40)	110 (29)	0.8	30.8
Southern European	3 (2)	26 (10)	29 (8)	2.8	32.9
former Yugoslav	3 (2)	14 (6)	17 (5)	2.0	13.4
other	0 (0)	12 (5)	12 (3)	0.7	19.5
Asian	28 (22)	36 (14)	64 (17)	23.7	9.2
Vietnamese	20 (16)	8 (3)	28 (7)		
others	8 (6)	28 (11)	36 (10)		
African	19 (15)	33 (13)	52 (14)	7.9	4.0
Latin American	6 (5)	3 (1)	9 (2)	2.8	1.0
Western Countries	0 (0)	1 (0)	1 (0)	3.1	12.4
German	4 (3)	13 (5)	17 (5)	---	---
Total	129 (100)	249 (100)	378 (100)	100.0	100.0

Table 3
Basic Relative Anti-foreign Crime Regressions for all German Counties
(standard errors in parentheses)

	Incidents per 100,000 Residents			Incidents per 1,000 Foreigners		
	(1)	(2)	(3)	(4)	(5)	(6)
Unemployment Rate	.221	-.096	-.102	1.068	-.276	-.220
	(.043)	(.071)	(.069)	(.273)	(.463)	(.466)
West	----	-3.861	-.944	----	-16.320	-8.988
		(.702)	(.778)		(4.564)	(5.285)
Km. to Western Border	----	----	.025	----	----	.062
			(.003)			(.023)
Percent Foreign	.013	.085	.091	.482	.787	.768
	(.054)	(.054)	(.051)	(.343)	(.350)	(.350)
Log Population Density	-.819	-.664	-.502	-8.479	-7.845	-7.599
	(.315)	(.308)	(.293)	(2.015)	(2.001)	(1.996)
Moderately Urban	-.135	.004	-.251	-2.965	-2.367	-2.034
	(.374)	(.365)	(.373)	(2.387)	(2.367)	(2.540)
Moderately Rural	.658	.597	.132	4.258	3.981	3.843
	(.541)	(.527)	(.525)	(3.458)	(3.421)	(3.569)
Rural	.623	1.062	.380	.928	2.741	2.380
	(.532)	(.524)	(.538)	(3.404)	(3.405)	(3.657)
KS	2.384	2.094	1.737	12.661	12.481	11.755
	(.716)	(.699)	(.666)	(4.581)	(4.543)	(4.529)
Travel Time to Metro Area (minutes)	----	----	.011	----	----	.001
			(.004)			(.027)
R^2	.146	.191	.272	.121	.142	.153
N	543	543	543	541	541	541

*This variable equals the distance from center of the county to the western border ignoring West Berlin, and 0 for western counties.

Table 4
Basic Relative Anti-foreign Crime Regressions for East and West Germany
(standard errors in parentheses)

	Incidents per 100,000 Residents				Incidents per 1,000 Foreigners			
	East (1)	West (2)	East (3)	West (4)	East (5)	West (6)	East (7)	West (8)
Unemployment Rate	-.394 (.171)	-.052 (.039)	-.394 (.165)	-.032 (0.42)	-3.277 (1.194)	.0002 (.008)	-3.318 (1.186)	.003 (.008)
Km. to Western Border	----	----	.020 (.005)	----	----	----	.071 (.037)	----
Percent Foreign	2.933 (.989)	.027 (.027)	1.982 (.987)	-.030 (.031)	-13.532 (6.893)	-.013 (.005)	-17.114 (7.101)	-.014 (.006)
Log Population Density	-1.894 (.766)	.054 (.172)	-1.447 (.749)	-.047 (.179)	-10.095 (5.330)	-.035 (.035)	-8.665 (5.348)	-.050 (.036)
Moderately Urban	-.172 (.891)	-.595 (.184)	-.049 (.862)	-.617 (.186)	-4.813 (6.212)	-.115 (.037)	-4.428 (6.176)	-.118 (.038)
Moderately Rural	2.684 (1.445)	-.783 (.245)	2.417 (1.399)	-.720 (.247)	19.926 (10.061)	-.160 (.049)	18.731 (10.016)	-.150 (.050)
Rural	1.788 (1.292)	-.858 (.272)	1.448 (1.252)	-.825 (2.75)	5.905 (8.993)	-.115 (.055)	4.450 (8.968)	-.109 (.056)
KS	4.652 (2.190)	.545 (.308)	3.710 (2.131)	.589 (.316)	21.938 (15.240)	.127 (.062)	19.009 (15.220)	.130 (.064)
Travel time to Metro Area	.015 (.008)	.005 (.002)	.019 (.008)	.005 (.002)	.042 (.060)	.001 (.0004)	.060 (.060)	.001 (.0004)
Fraction Low Qualifications	----	----	----	-.037 (.022)	----	----	----	-.006 (.004)
Fraction High Qualifications	----	----	----	-.004 (.054)	----	----	----	.00001 (.011)
Fraction Young Adults	----	----	----	.020 (.042)	----	----	----	.0001 (.009)
Log Mfg. Wage	----	----	----	.444 (.681)	----	----	----	.089 (.138)
R^2	.199	.088	.254	.104	.173	.087	.188	0.099
N	215	328	215	328	213	328	213	328

Table 5
OLS Regressions for Serious (Murder and Arson) Crime Rates
(standard errors in parentheses)

	Incidents per 100,000 Residents				Incidents per 1,000 Foreigners			
	East (1)	West (2)	East (3)	West (4)	East (5)	West (6)	East (7)	West (8)
Unemployment Rate	-.188 (.093)	-.044 (.028)	-.188 (.089)	-.036 (.030)	-1.704 (.577)	-.001 (.006)	-1.727 (.572)	-.001 (.006)
Km. to Western Border	----	----	.011 (.003)	----	----	----	.040 (.018)	----
Percent Foreign	1.268 (.536)	-.023 (.018)	.735 (.533)	-.023 (.023)	-6.575 (3.335)	-.009 (.004)	-8.607 (3.424)	-.010 (.005)
Log Population Density	-.570 (.415)	.109 (.123)	-.319 (.405)	.062 (.129)	-3.378 (2.578)	-.016 (.025)	-2.567 (2.579)	-.019 (.026)
Moderately Urban	-.042 (.482)	-.401 (.132)	.028 (.466)	-.397 (.134)	-1.118 (3.005)	-.082 (.027)	-.900 (2.978)	-.081 (.027)
Moderately Rural	1.699 (.783)	-.467 (.175)	1.549 (.756)	-.436 (.178)	9.839 (4.867)	-.102 (.035)	9.161 (4.829)	-.100 (.036)
Rural	.958 (.700)	-.576 (.195)	.768 (.676)	-.564 (.198)	4.698 (4.351)	-.072 (.039)	3.873 (4.324)	-.071 (.040)
KS	1.983 (1.186)	.295 (.220)	1.454 (1.151)	.300 (.227)	7.257 (7.373)	.069 (.045)	5.594 (7.339)	.064 (.046)
Travel time to Metro Area	0.008 (0.005)	.004 (.002)	0.010 (0.004)	.004 (.002)	.023 (.029)	.0006 (.0003)	.034 (.029)	.0006 (.0003)
Fraction Low Qualifications	----	----	----	-.011 (.016)	----	----	----	-.001 (.003)
Fraction High Qualifications	----	----	----	.026 (.039)	----	----	----	.006 (.008)
Fraction Young Adults	----	----	----	.004 (.030)	----	----	----	-.003 (.006)
Log Mfg. Wage	----	----	----	.036 (.490)	----	----	----	-.001 (.099)
R^2	.162	.090	.225	.096	.155	.075	.176	.078
N	2.5	328	215	328	213	328	213	328

Table 6
Alternative Maximum Likelihood Models for the Total
Number of Incidents of Crime Against Foreigners
(standard errors in parentheses)

	Poisson		Negative Binomial		Duration Model	
	East (1)	West (2)	East (3)	West (4)	East (5)	West (6)
Unemployment Rate	-.117 (.028)	-.038 (.027)	-.121 (.041)	-.052 (.043)	-.132 (.034)	-.051 (.033)
Km. to Border	.004 (.001)	----	.004 (.001)	----	.004 (.001)	----
Percent Foreign	.320 (.132)	-.019 (.016)	.346 (.222)	.019 (.025)	.280 (.153)	-.006 (.018)
Log Population	.772 (.122)	1.175 (.071)	1.103 (.216)	1.164 (.144)	.708 (.145)	.969 (.087)
Log Population Density	-.355 (.136)	-.007 (.120)	-.532 (.213)	.009 (.187)	-.344 (.164)	.003 (.152)
Moderately Urban	.222 (.149)	-.517 (.130)	.138 (.231)	-.592 (.181)	.295 (.188)	-.708 (.166)
Moderately Rural	.440 (.229)	-.763 (.212)	.386 (.349)	-.846 (.276)	.521 (.283)	-1.368 (.324)
Rural	.685 (.206)	-1.002 (.250)	.566 (.307)	-1.009 (.317)	.848 (.251)	-1.761 (.418)
KS	1.037 (.343)	.543 (.207)	1.295 (.549)	.594 (.349)	.924 (.421)	.291 (.257)
Travel Time to Metro Area (minutes)	.003 (.001)	.007 (.001)	.003 (.002)	.007 (.002)	.003 (.002)	.008 (.002)
α (Weibull shape parameter)	----	----	----	----	.437 (.019)	.473 (.017)
Pseudo R^2	0.225	.379	.097	.143	.105	.232
N	215	328	215	328	677	922

Date Due